Effect Of Kinesio Taping versus Effleurage Massage on Dysmenorrhea among Female Nursing Students

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Abstract

Background: Primary dysmenorrhea (PD) a widespread, ignored, and undertreated complain among adult females. It is considered a major factor behind their absence from colleges due to its vast variety of physical and psychological symptoms. Various nonpharmacological interventions can be beneficial in alleviating dysmenorrhea without any side effects**. Aim:** To determine the effect of kinesio taping versus effleurage massage on dysmenorrhea among Damanhour nursing students**. Design:** Pre and posttest quasi-experimental design was utilized. **Setting:** This study was executed at Faculty of nursing, Damanhour University, El-Beheira Governorate, Egypt. **Subjects:** Convenient sample of 90 female students was chosen. **Tools:** Three tools were used to collect data: Tool (I): Basic data structured interview questionnaire to obtain data about socio-demographic characteristics, menstrual history and lifestyle of nursing students, Tool (II): Visual Analogue Scale to measure severity of menstrual pain and Tool III: A modified version of Chamber Price pain rating scale (CPPRS) to evaluate behavioral responses to pain. **Results:** No statistically significant differences existed between the two groups prior intervention with mean 8.22 ± 2.42 &8.44±2.34 respectively. At 1st day after intervention, a significant reduction in pain severity was observed among the Kinesio group compared to the massage group with mean 3.76±2.60 & 6.20±2.69. While a highly statistically significant difference between the two groups was noted on the third day following the intervention. **Conclusion**: The study's major findings validated the study's hypothesis that nursing students who assume Kinesio taping exhibit less severity of dysmenorrhea than those who assume effleurage massage. **Recommendations:** Kinesio taping should be incorporated in nursing practice and nursing curricula as a routine nursing intervention for alleviating primary dysmenorrhea.

Keywords: Kinesio taping, effleurage massage, menstrual pain, nursing students

Introduction

Menstruation is the process of shedding endometrial tissue due to the absence of a mature egg that is fertilized by sperm. It is a normal and special experience for any female reaches puberty **(Attia et al., 2023).** However, many females experience menstrual problems that affect their daily activities as dysmenorrhea **(Mufidah & Ardina, 2025)**. Dysmenorrhea is unpleasant cramps in uterus that occur during menstrual shedding without pelvic pathologies. It is among the most frequently occurring gynecological conditions affecting teenage and young adult females globally **(Ferri, 2024).**

Dysmenorrhea has two categories: primary and secondary. Primary dysmenorrhea is idiopathic discomfort that is unrelated to pelvic disease and often begins with menarche. There are contributing factors such as increase prostaglandin secretion causing excessive contractility of the uterus which resulting in lower abdomen pain. in addition to psychological and nutritional factors **(Suryantini, 2022)**. Its diagnosis necessitates the exclusion of underlying pathogenic diseases. **(Abdullah & Koesrini, 2023).** On the other hand secondary dysmenorrhea, is caused by particular underlying diseases such endometriosis and uterine fibroids.**(Jareebi et al., 2025).**

Primary dysmenorrhea has adverse impact on daily activities, social isolation, poor academic achievement, and an increase in healthcare costs. Despite its high prevalence and significant impact on routine activities, it often remains undertreated and overlooked. Many young females may choose to tolerate pain silently, without seeking medical intervention **(Pramesti & Sudaryanto, 2024).**

Menstrual discomfort can be managed with a variety of treatment approaches, including pharmaceutical and nonpharmacologic techniques. Pharmaceutical options include contraceptive hormonal therapy, nonsteroidal anti-inflammatory drugs, and other analgesics. Although these medications act quickly, their long-term usage may result in issues as digestive problems, peptic ulcers, and diarrhea **(Celenay et al., 2023**). Consequently, different non-pharmaceutical options were investigated, including nutritional supplements, meditation, herbs, and acupuncture. Besides warming pads, transcutaneous electrical nerve stimulation (TENS), effleurage massage, and taping **(Šabec et al., 2024; Atiqa et al., 2025).**

Effleurage massage is a non-pharmacological technique deemed beneficial in alleviating pain. It is characterized by calm, rhythmic, gentle pressure applied distally or downward. It warms the abdominal muscles, increases blood flow, applies pressure, and encourages both mental and physical relaxation **(Khairunnisa, 2024).** Another benefit of effleurage massage is its ability to alleviate muscle tension and diminish stress hormones, thereby calming the mind and facilitating a return to a primitive state, which promotes the release of oxytocin and subsequently floods the system with endorphins that mitigate pain **(Argaheni, 2021; Afriani et al., 2024).**

Another nonpharmacological method for reducing menstrual pain is Kinesio taping (KT). This therapeutic tape is flexible and elastic, consistently applying frictional force on the skin. It stretches up to 140% of its main length prior its application on skin. It has special fabric properties as air permeability and water resistance so it can be used for several days **(Baqir et al., 2022).**These physiologic characteristics of KT suggest that it may be beneficial in alleviating uterine contractions **(Doğan et al., 2020).**

The application of KT depends on proprioceptive and cutaneous receptor stimulation properties. It can provide muscle relaxation and affect muscle tone when used properly. This method's capacity to lower interstitial pressure also contributes to its analgesic effects. This eliminates mediators of pain and inflammation by decreasing the signal which nociceptors receive and restoring blood and lymphatic circulation to normal. Additionally, the literature recommends using mechanisms associated with theory of Gate Control, which states that a tactile sensory stimulation might interfere with pain severity **(Mejías-Gil et al., 2021).**

Nurses encourage health promotion, and illness prevention activities as an essential aspect of health care. The goal of developing health programs is to promote a student's level of wellness in all aspects, such as family relationships, healthy diet, exercise, coping mechanisms, and adaptation. Today, they are using complementary medicine as a modern approach, in an attempt to offer comfort, pain control, and symptom management for females with dysmenorrhea **(Salem et al., 2023).** Nurses are able to provide multiple alternatives for relieving menstrual discomforts including dysmenorrhea, allowing females decide and chose the most effective one for them **(Mohamed et al., 2020).**

Significance of the study:

Globally, dysmenorrhea affects approximately 50% of menstruating women. About 10% of them experience severe menstrual pain with incapacitation for one to three days per month. It is most common in the age group 20-24 years with a prevalence rate approaching 90% in this group **(Ferri, 2024).** In Egypt, the prevalence rate of dysmenorrhea in Beni Suef, was 92% **(Arafa et al., 2018),** while the rate of dysmenorrhea in port-said was 74.6% **(Moustafa et al., 2023).** Dysmenorrhea has a negative impact on social life, worsening interpersonal relationships and fostering unfavorable social interactions, both of which lower quality of life (QoL) **(Jareebi et al., 2025).**

Few studies were done to examine the effect of kinesio taping versus effleurage massage on dysmenorrhea. Thus, this study aimed to determine the effect of kinesio taping versus effleurage massage on dysmenorrhea among female nursing students. This study complies with Sustainable Development Goal (SDG) 3, which aims at empowering people to live healthy lives and promote the well-being of all and at all ages.

Aim of the study

To determine the effect of kinesio taping versus effleurage massage on dysmenorrhea among Damanhour nursing students.

Research hypotheses:

H0: Nursing students who assume kinesio taping exhibit the same severity of dysmenorrhea as those who assume effleurage massage.

H1: Nursing students who assume kinesio taping exhibit less severity of dysmenorrhea than those who assume effleurage massage.

H2: Nursing students who assume effleurage massage exhibit less severity of dysmenorrhea than those who assume kinesio taping.

Subjects and Methods

Research design:

Pre and post-test quasi-experimental research design was used, where effect of independent variables (Kinesio taping versus effleurage massage) on the dependent variable (dysmenorrhea) was examined in this study.

Settings:

This study was conducted at the Faculty of Nursing, Damanhour University, located in El-Beheira Governorate, Egypt.

Subjects:

Convenient sample of 90 female students was chosen from faculty of nursing, Damanhour University after performing survey for all female students from different academic years in 2023-2024 to identify students who meet the following inclusion criteria: unmarried females, had primary dysmenorrhea (moderate or severe), normal menstrual cycle, free from any medical and gynecological conditions, don't use analgesics during dysmenorrhea and willing to participate in the study.

The sample size was calculated using Epi info 7 statistical program The final sample size was 90. The selected students were categorized into two equal groups using random number generator program. Group 1 (45 students) who used Kinesio taping and group 2 (45 students) who used effleurage massage.

Tools of data collection

Data was gathered through using three tools:

Tool (I): Basic data structured interview questionnaire:

This tool was designed and utilized by the researcher to gather the following data, consisting of three parts:

- **Part I:** Socio-demographic characteristics involving: (age, residence and type of family)
- **Part II:** Menstrual history including: (age of menarche, feeling during 1st menstruation, onset of menstrual pain, etc …)
- **Part III:** Lifestyle pattern: (pattern of exercise, sleep duration, dietary habits, etc….)

Tool (II): Visual Analogue Scale

It was originally developed by Woodforde and Merskey (1972) and adopted by the researchers to measure severity of menstrual pain. This self-report tool uses a horizontal line in centimeters from 0 to 10, which stands for 0 (no pain), 1-3 (mild), 4-6 (moderate), 7-9 (severe) and 10 (unbearable).

Tool III: A modified version of Chamber Price pain rating scale (CPPRS):

This tool was initially developed by Chambers and Price (1967). It was adopted by the researcher to assess behavioral responses to pain. The scale is categorized into: posture, gross motor activity, facial expression, and verbalization.

- Posture tense body posture (2)**,** guarded body posture (1), very relaxed (0).

- Gross motor activity: very restless (2), slightly restless (1), quiet (0).

- Facial expression: constant frowning or grimacing (2), some frowning (1), no frowning (0).

- Verbalization: crying/sobbing (2), groaning/ moaning (1), normal or no sound (0).

The total score ranged from 0-8: No pain (0), Mild (1-2), Moderate (3-4), Severe (5-6) and Unbearable (7-8).

Validity and reliability of the tools

Content validity:

A panel of three obstetric and gynecologic nursing experts evaluated the content validity of tool 1 during the development of data collection tools. They determined that the tool was comprehensive, clear, relevant, understandable, and applicable, and they made the required adjustments.

Reliability of the tools:

Tools (II) & (III) were translated into Arabic version and tested for their reliability by

Cronbach's Alpha test (0.88) & (0.82) respectively.

Ethical Considerations

Official approval was secured from the research ethics committee, and a formal letter was submitted to the dean of the Faculty of Nursing, Damanhour University to request permission to carry out the study and collect necessary data following explaining research purpose. Written informed consent was secured from each student before data collection. The privacy of students was assured. The confidentiality of all collected data was preserved. Each student was told that participation is entirely voluntary and can withdraw at any time.

Pilot study:

The pilot study was conducted on 10% of the sample (9 students) to evaluate the usability and clarity of tools, determine any potential obstacles that could hinder the researcher, and interfere with data collection, in addition to estimate the needed time to complete tools. Modifications were subsequently done. This sample wasn't included from the overall study sample.

Fieldwork:

Researchers collected data from beginning of October 2024 to the end of December 2024. They introduced themselves and briefly gave the female students an overview about the study's purpose. The following steps were used to carry out the study, assessment, implementation, and evaluation

The study was accomplished through:

1- Assessment (Pre-test):

The participants obtained a detailed overview about the study's purpose and their roles. The researcher built rapport with the subjects, collected their telephone and/or mobile numbers, and provided them with the researcher's contact information. Each subject was interviewed individually. Informed written consent was obtained. The eligible female students were divided into either the study group (1) or the study group (2).

Basic data was collected from students before the intervention using (tool 1), which included Socio-demographic characteristics, menstrual history and lifestyle pattern. Then pretest was done to assess pain severity through Visual Analogue Scale (Tool II), and behavioral responses to pain using modified version of Chamber Price Pain Rating Scale (Tool III). Tools took about 10-15 minutes to be completed. All data collection occurred in the faculty of nursing clinic.

2- Implementation:

Phase 1: Education and Training:

In this phase the researcher conducted two sessions for each group.

Group (1):

During 1st session, researchers explained to students, definition of dysmenorrhea, risk factors, effect of pain on daily activities. During 2nd session, researchers showed Kinesio taping and explained its role in relieving menstrual pain and technique of using it on a doll then asked students to redemonstrate it and pictures were sent on WhatsApp group so that students could apply it independently when menstrual pain started. Sessions lasted about 20- to 30 minutes.

Group (2):

During 1st session, Researchers also explained to students, definition of dysmenorrhea, risk factors, effect of pain on daily activities. During 2nd session, the technique of effleurage massage was performed on a doll then students were asked to redemonstrate it to reassure proper application for massage technique, and videos were sent on WhatsApp group so that students could do it independently when menstrual pain started. Sessions lasted about 20- to 30 minutes.

Phase 2: Application of intervention

Each female was asked to come individually at faculty of nursing clinic during lecture break or clinical lab training break one day before time of menstrual shedding.

Group (1): The researchers cut strips of KT, 5 cm wide. One strip was applied horizontally under umbilical area, and another strip was placed vertically over the first one, making a cross shape. The third strip was applied on lower back, then asked the student to keep it dry and clean for the 1st three days of menstrual pain.

Group (2): The researcher asked the student to lie on her back and small pillow was placed under their knees. Then, the researcher washed, dried, warmed hands, and started effleurage massage with rotation movements on the abdomen for 10-15 min. The upper part of the pubic bone and the part around the navel were massaged. Then the student was asked to apply effleurage massage for 10-15 min, 4 times daily for the 1st three days of menstrual shedding.

3- Evaluation (Post-test):

Each student was assessed twice, at 1st day and at 3rd day of menstrual shedding through attending to faculty of nursing clinic or through telephone calls, if the student didn't attend faculty at evaluation time using tools (II & III).

Statically analysis:

Statistical analysis of data was organized, computerized, tabulated, and was coded, transferred into designed form suitable for computer feeding. Data was checked to avoid mistakes during data entry. IBM SPSS software package version 26.0 was utilized to analyze the data.

Results:

Table (1): showed that 100.0% of kinesio group compared with 95.6% of massage group aged between 21–24 years. Only (4.4 %) of massage group was between 18-20 years. Additionally, rural residence was more common among (82.2%) of the kinesio group and (66.7%) of massage group. While (17.8%) & (33.3%) respectively were urban dwellers. Moreover, most students in both groups (66.7%) lived in nuclear families and (33.3%) lived in extended families.

Table (2): illustrated that (95.6%) & (86.7%) of kinesio and massage group respectively, their age of menarche was between 12-16 yrs. Concerning their feeling at 1st period, (24.4%) & (26.7%) of both groups respectively had crying, while (20%) of kinesio group compared to (37.8%) of massage group had embarrassment and (37.8%) & (17.8%) of both groups had fear and anxiety. (Additionally, (51.1%) of kinesio group and (66.7%) of massage group had menstrual pain (dysmenorrhea) since 1st menstruation. Concerning beginning of pain at each cycle, it started From 1st day lasting 24–72 hours for (88.9% & 84.4%) of both groups . Majority (88.9%) & (82.2%) of kinesio and massage group, experienced pain at abdomen radiating to thighs and back. Concerning measures which already done to reduce menstrual pain, (60.0%) of kinesio group had rest/Sleep and drank warm fluids like cinnamon compared to about one half of massage group .

Figure 1: displayed that most common physical symptoms associated with pain included, diarrhea (55.6%) & (62.2%) ,vomiting (51.1%) & (42.2%), loss of appetite (64.4%) & (48.9%) and weakness/fatigue (60.0%) & (57.8%) between students in both groups respectively.

Figure 2: showed that common psychological symptoms associated with pain were irritability (91.1%), frustration (40.0%) in Kinesio group compared to irritability (80.0%) and anxiety (46.7%) in massage group.

Table (3): displayed that (68.9%) & (73.3%) of kinesio and massage group respectively didn't exercise regularly. While 31.1% & 26.7% of both groups exercise regularly. Concerning sleep duration, (75.6%) & (55.6%) of both groups sleep between less than 6 hours daily. Regarding dietary habits, (55.6%) & (46.7%) of both groups occasionally had unhealthy diet. Additionally, social relationship was affected among (73.3%) & (82.2%) of both groups. Also (62.2%) & (53.3%) of both groups were absent from college due to menstrual symptoms.

Table (4): illustrated that no statistically significant differences were observed between the two groups prior the intervention with mean 8.22 ± 2.42 &8.44±2.34 respectively. At 1st day, a significant reduction in pain intensity was observed among the kinesio group compared to the massage group after the intervention with mean 3.76±2.60 & 6.20±2.69. At 3rd day, a highly statistically significant difference was noted between both groups after the intervention, demonstrating the superior effectiveness of kinesio taping in reducing menstrual pain severity.

Table (5): clarified that no significant differences were found between both groups before intervention P (0.908). At 3rd day, there were highly statistically differences between both groups with mean scores in all behavioral indicators as posture (0.38 ± 0.49 vs. 0.93 ± 0.65), gross motor activity (0.33 ± 0.52 vs. 1.02 ± 0.75), facial expression (0.64 ± 0.68 vs. 1.11 ± 0.61), and verbalization (0.29 ± 0.59 vs. 1.11 ± 0.65), which

suggests superior efficacy of kinesio taping in reducing behavioral responses to pain.

Table (6): demonstrated highly statistically difference in total pain scores based on CPPRS between the kinesio and massage group P<0.001, which strongly supports the superior effectiveness of Kinesio taping in reducing menstrual pain intensity compared to massage.

Table (1): Distribution of the studied nursing students according to their Sociodemographic characteristics

Socio-demographic characteristics	Kinesio group (N= 45)		Massage group (N= 45)		χ^2	^{MC}p
	No.	%	No.	%		
Age:						
18-20	0	0.0%	2	4.4%	2.045	0.494
21-24	45	100.0%	43	95.6%		
Residence:						
Rural	37	82.2%	30	66.7%	2.862	0.091
Urban	8	17.8%	15	33.3%		
Type of Family						
Nuclear	30	66.7%	30	66.7%	0.000	1.000
Extended	15	33.3%	15	33.3%		

Table (2): Distribution of the studied nursing students according to their menstrual history

Menstrual History	Kinesio group (N= 45)		Massage group (N= 45)		χ^2	^{MC}p
	No.	%	No.	%		
Age of menarche						
Less than 12	2	4.4%	3	6.7%	3.395	0.197
12–16	43	95.6%	39	86.7%		
More than 16	0	0.0%	3	6.7%		
Feelings at First Period						
Crying	11	24.4%	12	26.7%	6.812	0.121
Embarrassment	9	20.0%	17	37.8%		
Fear and Anxiety	17	37.8%	8	17.8%		
Happiness	0	0.0%	1	2.2%		
Nothing	8	17.8%	7	15.6%		
Onset of menstrual pain						
since 1st menstruation	23	51.1%	30	66.7%	2.739	0.254
after 2 years of 1st menstruation	17	37.8%	10	22.2%		
recently	5	11.1%	5	11.1%		
Beginning of pain at each cycle						
From 1st day lasting 24–72 hours	40	88.9%	38	84.4%	1.328	0.769
A few days before menses	5	11.1%	7	15.6%		
Pain Location						
Lower abdomen radiating to back/thighs	40	88.9%	37	82.2%	1.228	0.669
Lower abdomen only	4	8.9%	5	11.1%		
Lower back only	1	2.2%	3	6.7%		
Measures already used to reduce menstrual pain						
Nothing	3	6.7%	4	8.9%	0.155	1.000
Rest/Sleep	27	60.0%	21	46.7%	1.607	0.205
Reduce salt/caffeine/sugar	7	15.6%	6	13.3%	0.090	0.764
Drink warm fluids like cinnamon	27	60.0%	23	51.1%	0.720	0.396
Take painkillers	26	57.8%	25	55.6%	0.045	0.832
Warm bath	13	28.9%	18	40.0%	1.230	0.262
Use hot water bottle or heating pad on abdomen	16	35.6%	17	37.8%	0.048	0.827

***Responses are not mutually exclusive**

Figure (1): Distribution of studied nursing students according to physical symptoms associated with pain

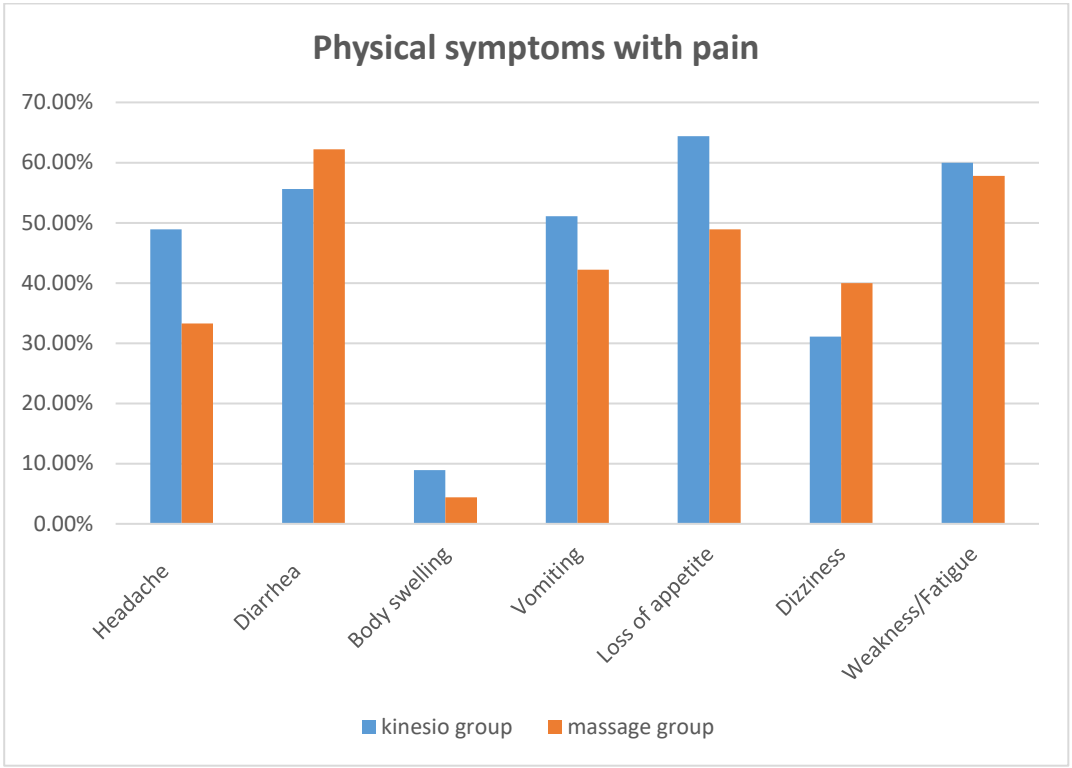

Figure (2): Distribution of studied nursing students according to psychological symptoms associated with pain

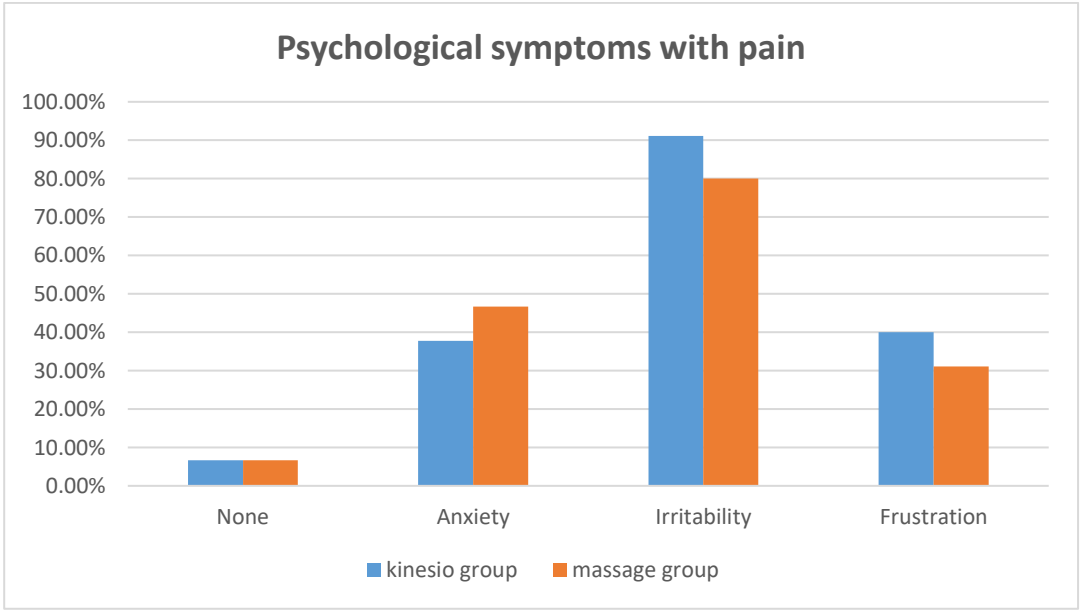

Table (3): Distribution of the studied nursing students according to their lifestyle

Lifestyle assessment	Kinesio group (N= 45)		Massage group (N= 45)		χ^2	^{MC}p
	No.	%	No.	%		
Pattern of exercise						
Regular	14	31.1%	12	26.7%	0.216	0.642
Irregular	31	68.9%	33	73.3%		
Sleep Duration:						
Less than 6 hrs	34	75.6%	25	55.6%	4.065	0.131
6–8 hrs	6	13.3%	12	26.7%		
More than 8 hrs	5	11.1%	8	17.8%		
Dietary habits						
Unhealthy	25	55.6%	21	46.7%	0.715	0.699
Average	14	31.1%	17	37.8%		
Healthy	6	13.3%	7	15.6%		
Effect of menstrual symptoms on social relationships						
Yes	33	73.3%	37	82.2%	1.029	0.310
No	12	26.7%	8	17.8%		
Absenteeism from college due to menstrual symptoms						
Yes	28	62.2%	24	53.3%	0.729	0.393
No	17	37.8%	21	46.7%		

χ^2: Chi square test MC: Monte Carlo

Table (4): Distribution of studied nursing students according to pain severity, using VAS

Pain severity scale	Kinesio group (N= 45)		Massage group (N= 45)		Test of sig	P
	No.	%	No.	%		
Before						
No pain	0	0.0%	0	0.0%	**x^2=0.972**	**0.615**
Mild	0	0.0%	0	0.0%		
Moderate	16	35.6%	14	31.1%		
Severe	25	55.6%	24	53.3%		
Unbearable	4	8.9%	7	15.6%		
Mean ± SD	**8.22±2.42**		**8.44±2.34**		**t= 0.443**	**0.659**
At 1st day						
No pain	6	13.3%	3	6.7%	**x^2=12.764***	**0.010***
Mild	16	35.6%	7	15.6%		
Moderate	18	40.0%	16	35.6%		
Severe	3	6.7%	13	28.9%		
Unbearable	2	4.4%	6	13.3%		
Mean ± SD	**3.76±2.60**		**6.20±2.69**		**t=4.384***	**<0.001***
At 3rd day						
No pain	15	33.3%	5	11.1%	**x^2=16.628***	**0.001***
Mild	19	42.2%	11	24.4%		
Moderate	8	7.8%	14	31.1%		
Severe	2	4.4%	11	24.4%		
Unbearable	1	2.2%	4	8.9%		
Mean ± SD	**2.64±1.52**		**5.27±3.22**		**t=4.04***	**<0.001***
F (P)	**173.535* (<0.001*)**		**22.872* <0.001***			
η^2	**0.855**		**0.342**			

χ^2: Chi square test MC: Monte Carlo
t: independent t- test p0: p value for Paired t-test between before and after in each groups
η^2: Partial Eta Squire * Statistically significant p-value at ≤0.05

Table (5): Distribution of studied nursing students according to their behavioral responses to pain based on (CPPRS)

CPPRS	Kinesio group (N= 45)	Massage group (N= 45)	T	P
Posture				
Before	1.67±0.95	1.64±0.86	0.116	0.908
At 1st day	0.80±0.66	1.18±0.68	2.665*	0.009*
At 3rd day	0.38±0.49	0.93±0.65	4.561*	<0.001*
F (p)	44.441* (<0.001*)	17.875* (<0.001*)		
η^2	0.875	0.378		
Gross motor activity				
Before	1.27±0.45	1.33±0.67	0.553	0.582
At 1st day	0.89±0.65	1.20±0.69	2.199*	0.031*
At 3rd day	0.33±0.52	1.02±0.75	5.041*	<0.001*
F (p)	38.232* (<0.001*)	2.598 (0.080)		
η^2	0.758	0.138		
Facial expression				
Before	1.58±0.50	1.49±0.51	0.839	0.404
At 1st day	1.02±0.69	1.33±0.71	2.112*	0.038*
At 3rd day	0.64±0.68	1.11±0.61	3.425*	0.001*
F (p)	35.153* (<0.001*)	10.636* (0.002*)		
η^2	0.852	0.331		
Verbalization				
Before	1.53±0.59	1.38±0.58	1.268	0.208
At 1st day	0.91±0.73	1.33±0.64	2.911*	0.005*
At 3rd day	0.29±0.59	1.11±0.65	6.303*	<0.001*
F (p)	51.410* (<0.001*)	5.001* (0.009*)		
η^2	0.932	0.129		

t :independent t- test F:ANONA with repeated measures η^2:Partial Eta Squire
* Statistically significant p-value at ≤0.05

Table (6): Distribution of studied nursing students according to total pain score based on (CPPRS)

Level	Kinesio group (N= 45)		Massage group (N= 45)		Test of sig	P
	No.	%	No.	%		
Before						
No pain	0	0.0%	0	0.0%		
Mild	0	0.0%	0	0.0%		
Moderate	6	13.3%	8	17.8%	**x^2=1.990**	**0.370**
Severe	23	51.1%	27	60.0%		
Unbearable	16	35.6%	10	22.2%		
At 1st day						
No pain	8	17.8%	2	4.4%		
Mild	4	8.9%	4	8.9%		
Moderate	21	46.7%	13	28.9%	**x^2=10.659***	**0.026***
Severe	6	13.3%	11	24.4%		
Unbearable	6	13.3%	15	33.3%		
At 3rd day						
No pain	14	31.1%	2	4.4%		
Mild	19	42.2%	5	11.1%		
Moderate	11	24.4%	18	40.0%	**x^2=37.65***	**<0.001***
Severe	1	2.2%	15	33.3%		
Unbearable	0	0.0%	5	11.1%		
Total score					**T**	**P**
Before	6.04±1.52		5.84±1.40		0.649	0.518
At 1st day	3.62±2.48		5.04±2.34		2.795*	0.006*
At 3rd day	1.64±1.38		4.18±1.95		7.117*	<0.001*
F (p)	**90.037*** **(<0.001*)**		**18.915*** **(<0.001*)**			
η^2	0.982		0.431			

χ^2: Chi square test MC: Monte Carlo
t :independent t- test F:ANONA with repeated measures η^2:Partial Eta Squire
* Statistically significant p-value at ≤0.05

Discussion:

Primary dysmenorrhea is a prevalent gynecological issue among adolescent and young females, typically beginning within a few years after menarche, when ovulatory cycles are established. Despite the fact that primary dysmenorrhea is not fatal, it significantly affects quality of life and causes emotional distress. Early recognition, education, and appropriate management are essential to reduce its impact on women's health and daily activities **(Guimarães & Póvoa, 2020; Nagy et al., 2023,The American College of Obstetricians & Gynecologists (ACOG), 2023).**

Non-pharmacological management of primary dysmenorrhea focuses on lifestyle modifications and supportive measures that help reduce menstrual pain without the use of medication **(Guimarães & Póvoa, 2020; Susanti & Mulyani, 2023).** So, the study aimed to determine the effect of Kinesio taping versus effleurage massage on dysmenorrhea among Damanhour nursing students. The study's major findings supported the study's hypothesis that nursing students who assume kinesio taping exhibit less severity of dysmenorrhea than those who assume effleurage massage.

The present study findings showed that majority of both groups suffered of pain from 1st day of menstruation lasting 24–72 hours. This is due to increasing secretion of prostaglandins with the beginning of menstrual flow and continues for a period of 24- 48 hours that cause

uterine contractions which exerts pressure on nearby vessels. This results in pain and cramping due to cut off oxygen supply to the uterus **(Kho & Shields, 2020).** These findings were in harmony with the result of the following studies, El-Kholy and Shalaby (2022) who declared that dysmenorrhea started with the onset of the shedding and continued for 48 hours. Also , **Kural et al. (2015) who** found that majority of females had onset of pain on day one.

Regarding pain location, it was revealed that majority of both groups suffered from pain at abdomen radiating to thighs and back. This can be explained as the uterus is innervated by visceral sensory fibers that enter the spinal cord through the lower thoracic (T10–T12) and upper lumbar (L1) segments. These spinal segments also receive sensory input from the lower back and thighs. This overlap causes referred pain that is felt not only in the uterus but also in the back and thighs **(Origoni et al., 2014).** This finding was consistent with the results of **Kural et al. (2015)** who reported that majority of the study subjects experienced pain at lower abdomen, back and thighs.

Concerning **measures which already done to reduce menstrual pain,** three-fifths of kinesio group had rest/sleep and drank warm fluids like cinnamon compared to about one half of massage group. This may be attributed to the effect of rest and sleep on body relaxation and reduction of sympathetic nervous system activity which in turn lowers uterine contractions. In addition to warm fluids that improve blood circulation and help in relaxing uterine and abdominal muscles too **(Smith & Kaunitz, 2018).** This result is in conformity with study of Wal et al. (2024) observed that more than half of subjects experienced rest/sleep and drank warm fluids to reduce menstrual pain.

In relation to physical symptoms associated with primary dysmenorrhea, it was found that more than half of both groups complained from weakness/fatigue. This may be attributed to high amounts of prostaglandins which are released from the endometrium. These chemicals stimulate uterine contractions that lead to reduced uterine blood flow and ischemia that contribute to the feeling of generalized weakness **(The American College of Obstetricians & Gynecologists (ACOG), 2023)**. This finding is in harmony with Mahmoud et al. (2022) who found that more than half of female students had weakness and malaise.

Regarding psychological symptoms associated with primary dysmenorrhea, it was observed that most of both groups suffered from irritability. This can return to low level of serotonin and dopamine hormones during menstruation which are associated with mood changes and irritability **(Adib-Rad et al., 2022).** This result was similar to the study of Mahmoud et al. (2022) who observed that the majority of the female students suffered from mood changes.

Concerning **students' lifestyle,** it was noticed that most of both groups didn't practice **exercise** regularly. This can be justified as menstrual pain often causes fatigue, discomfort, making student unable to perform physical activity. Additionally, cultural misconceptions and fear that exercise might worsen cramps. This result was in the same line with study of **Fernández-Martínez et al. (2018)** who observed that most of studied subjects didn't practice exercise regularly.

In addition, more than half of both groups sleep less than 6 hours daily. This result was in agreement with the result reported by **Oluchina (2025)** who revealed that most of studied subjects sleep less than 8 hours daily. This is due of high levels of prostaglandins trigger uterine contractions that lead to intense cramping pain in the lower abdomen/back makes it difficult to fall asleep and stay asleep **(Jeong et al., 2023).**

Moreover, about half of both groups had unhealthy diet. This is attributable to primary dysmenorrhea, which is associated with nausea or diarrhea, leading females to diminish their food intake, skip meals, or depend on unhealthy foods such as sweets, caffeine, and salty snacks. This further leads to an imbalanced diet pattern **(Sharghi et al., 2019).** This finding wasn't similar to the finding reported by **Oluchina (2025)** who found that more than half of subjects had imbalanced diet.

Regarding **social relationship, it** was affected among most of both groups. This may be related to severe menstrual pain which obligate women to miss social gatherings, educational activities, or work, leading to reduced participation in group interactions and feelings of isolation **(Ghandour et al., 2024; Hackman et al., 2024).** This result was

parrarell with the study of Bavil et al. (2016) who showed significantly less positive social relationships in the group with primary dysmenorrhea.

The study findings revealed a significant decrease in pain severity among the kinesio group compared to the massage group **at 1st day,** after the intervention as measured by VAS with mean **3.76±2.60 & 6.20±2.69** ($p<0.001$). **At 3rd day,** a highly significant statistically difference was noted between both groups after the intervention. This result demonstrates that KT is more effective than massage in reducing the menstrual pain severity.

This result is approximately consistent with the findings of several other researches. First, **Febriani1 & Adenikheir, (2021)** who observed that the post-intervention pain score for KT group decreased to 0.60 with MD 4.8 and P-value 0.000. This means that there was a significant effect of KT for menstrual pain. The mean of the abdominal massage group pain score was 5.40 at the baseline and dropped to 1.60 with MD 3.8 and P-value 0.0005 post-intervention. This means that abdominal massage was effective with menstrual pain. Thus, KT was more effective in decreasing menstrual pain than abdominal massage

Second, **Mariana & Carmen-Oana, (2014)** demonstrated a minimal difference in pain severity, discomfort and range of motion in the cervical region between massage and KT groups, but the patients utilized kinesio taping recorded a more rapid reduction of pain.

Third, Waris et al. (2025) who showed that there were significantly decreased pain intensity immediately after applying KT in experimental group compared to control group and the experimental group revealed significantly greater improvements in pain reduction ($p=<0.001$), indicating the intervention's effectiveness.

Forth, it is also consistent with Boguszewski et al. (2020) revealed that pain reduction occurred almost within 2–4 hours after the tape application ($p < 0.001$) and about 60% had the greatest reduction in pain severity on the third day.

Fifth, Arianeputri and Wahyuni (2024) who noticed that KT relieve pain of menstruation which was seen on the graph of dysmenorrhea measured by a VAS .It indicates that the level of pain experienced had decreased. It concluded that Kinesio taping can improve physical activity and quality of life in adolescents due to its alleviating effect on dysmenorrhea.

However, this finding contradicts with the result of **Setyawati (2013)** suggested that both massage and KT effectively alleviate dysmenorrhea, with no significant difference in their effects. This may be attributed to the discrepancies observed in sample size and the criteria utilized for participant selection.

Moreover, the results of the present study demonstrated highly statistically difference in total pain scores based on CPPRS between the Kinesio and massage group $P<0.001$ after the intervention. This result strongly supports the superior effectiveness of KT in reducing menstrual pain intensity compared to massage. This finding matches the study of **Kanti et al. (2022)** who concluded that KT alleviates dysmenorrhea and improves functional independence. Also, this result is in conformity with study of Forozeshfard et al. (2016) who concluded that Kinesio taping effectively reduces pain and functional disability.

Finally**,** the current study suggested that Kinesio taping as non-pharmacological, simple, convenient, cost-free, non-invasive, and an efficient method to decrease the intensity of menstrual pain and its use appears justified. It should be available and suitable as an analgesic during menstrual pain.

Strengths

This study provided significant insights on the effect of Kinesio taping versus effleurage massage on dysmenorrhea. These two modalities weren't widely studied against each other, but studies evaluated the effect of either Kinesio taping or effleurage massage on dysmenorrhea pain separately.

Limitations:

There was dropout because some students can't attend the day before shedding for application of Kinesio taping or receiving massage session.

Conclusion

The findings concluded that nursing students who assume kinesio taping display less severity of dysmenorrhea than those who assume effleurage massage. This can be justified as kinesio taping is applied and kept for several days providing continuous therapeutic stimulation, while massage is a short-term intervention that lasts only during and shortly after the session

Recommendations:

According to the results of this study, it is advised that:

- Kinesio taping should be incorporated in nursing practice and nursing curricula as an alternative therapy for alleviating primary dysmenorrhea.
- Educational programs should be developed for adult females in different schools and colleges to highlight the effect of Kinesio taping on alleviating dysmenorrhea.
- Dissemination of Kinesio taping as non-pharmacological therapy in alleviating dysmenorrhea as widely as possible through social media platforms.

For further researches:

- This research should be conducted on larger numbers of females with dysmenorrhea over several menstrual cycles.
- Investigate the effect of Kinesio taping on alleviating dysmenorrhea versus other alternative therapies.

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